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# 13-PR. Q.F. GUN.

## GUN DRILL.

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1914.

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## 18 pr. & 13 pr. Q.F. Gun Drill Pamphlets Amendments.

18 pr. Q.F. Gun Drill Pamphlet.

Delete from "Lay," line 18, page 24, to "Guns," line 31, and substitute—

13 pr. Q.F. Gun Drill Pamphlet.

Delete from "Lay," line 22, page 24, to "Guns," line 35, and substitute—

Before carrying out this test, care should be taken that the bearings on which the clinometer rests are free from paint, and that the bottom of the clinometer is clean.

Set the sight clinometer at zero. Level the bubble by turning the elevating hand-wheel on the left side of the gun. Turn the sight clinometer end for end. If the bubble is not in the centre of its run, it should be levelled by turning the micrometer head of the sight clinometer. Assuming that the clinometer is now reading, say, 10 minutes elevation, set the clinometer to 5 minutes elevation (half of the above reading). Re-level the bubble by means of the elevating hand-wheel. Again check the clinometer end for end in case any further small correction is required. If the bubble now remains in the centre of its run, the micrometer heads are slackened, set to zero and re-tightened.

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## GENERAL INSTRUCTIONS.

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Preliminary instruction in the equipment should be given to each recruit before any attempt is made to teach him Section Gun Drill.

As soon as he is conversant with all parts of the equipment, and can handle in the best and quickest manner each of the working parts of the gun, instruction in Section Gun Drill should be commenced.

This instruction should take the form of practical demonstrations dealing with the work of each man of the detachment, and all men under instruction should, in turn, carry out the work of each particular number.

Once the work of each number has been thoroughly mastered it should not take long for the recruit to learn the actual drill.

It is most important that a distinction should be drawn between *instruction* and *drill*.

During the former the language used should be as simple as possible, and the meaning of all technical terms which are necessary should be carefully explained. A conversational tone should be adopted and under no circumstances whatever should anything in the nature of long quotations from drill books be allowed. The men should be permitted to assume an easy attitude and their interest should not be allowed to flag. They should be encouraged in the fullest possible degree to ask questions.

At *drill* on the contrary the most rigid discipline must be maintained, orders must be clear, decisive and emphatic, and the detachments made to work steadily, smartly, and rapidly. At the same time the utmost accuracy is essential and any deviation from the methods laid down must be at once strictly checked.

The following instructions are arranged so that all work carried out by each individual member of a detachment is grouped together. Those paragraphs marked with an asterisk should not however be taught until the drill has been learnt.

### Detailed Instructions for Gun Detachment.

The detachment consists of 9 men, 6 of whom work in the firing battery, the remainder forming a reserve.

The duties of each particular number are as follows :—

## No. 1.

1. Before leaving the gun park he must satisfy himself that the equipment of his sub-section is complete in every respect, reporting the fact to his section commander.

2. He must examine the buffer and see that it is properly filled. To do so he should remove the plug of the filling hole and bring the gun into a horizontal position, the control plunger should then be just covered with oil.

He must be careful to ascertain that oil is not leaking from the buffer through the packing. A leakage may be detected by means of two holes underneath the outer spring case, one in front and one in rear. A leakage of oil is liable to cause a serious accident to the equipment during firing.

Instructions for filling the buffer are shown on a metal plate on the outer spring case.

3. He only gives the words of command shown for him in Gun Drill. His executive orders should be no louder than is necessary for his sub-section to hear, but when assisting to pass orders down the battery, they should be given out sufficiently loud to ensure them getting through.

4. He must acknowledge all orders affecting his sub-section by saluting, also any orders that he may be required to pass down the battery. The salute must be given accurately and unmistakably so that it may be plainly seen.

5. When his gun is in action in the open he must ascertain at the first opportunity the target or reference point, and also both in the open and under cover the aiming point, or auxiliary aiming point, if either are used by the layer.


\*6. He must calculate the deflection necessary to compensate for any difference in level of wheels. To do so he should make a liberal estimate of the number of inches difference in level of wheels and multiply it by the number of degrees elevation due to the range to be fired at, which can be seen on the rim of the range indicator. The result must be given in minutes deflection to the side of the higher wheel (see F.A.T. Section 119). *He must not alter this deflection after his gun has once opened fire.*

When a switch is made to a target at a different range he must bear in mind the amount of deflection already on the sight for difference in level of wheels when making his new calculation.

To avoid the necessity for giving deflection for difference in level of wheels, and to assist in steadying the carriage, the higher wheel may be dug in if time and ground admit. The hole should be dug in front, or in rear of, the higher wheel, and the gun run into it.

7. If the gun is in action on a side slope and the higher wheel has not been dug in, he will direct the layer to adjust the traversing gear so that the breech is one or two degrees on the side of the higher wheel, otherwise the gun is apt to "side-slip" down the slope.

\*8. When a gun is in action on a forward slope or a high angle

of elevation is likely to be required it is always advisable to dig in the trail. The track for the trail should be semicircular in shape and shaped in section thus : . The front edge should be gently sloped to avoid the trail resting on it.

No. 1 must see this done without waiting for orders.

\*9. In order to find the highest elevation at which the gun can be fired without digging in the trail he must set the sight clinometer to the angle of sight ordered (zero if none has been ordered), and level the bubble by the handwheel on the *left* side, the gun then being elevated as far as possible by the handwheel on the *right* side. The range indicator will now show the highest elevation at which the gun can be fired. When the spade becomes buried after the first round about 900 yards extra range may be obtained.

10. He lays for direction by looking along the top of the spring case and moving the trail as required by means of the traversing lever. He should lay the gun within half a degree of zero traverse by the traversing lever for the first round (except when special traverse has been ordered), so that when the spade engages in the ground the layer will have as large an amount of traverse as possible available for subsequent corrections for line. To enable this to be carried out the layer must signal to No. 1 with the palm of his hand the direction in which he wishes the trail moved.

When the traverse (which he must closely watch) becomes exhausted he should immediately look over the spring case and note the direction in which it is pointing. The layer will then adjust the traversing gear as required (*vide* paragraph 7), and when adjusted, No. 1 must move the trail so that the spring case is pointing in the same direction as before.

11. When direct laying is employed, and a new target is ordered and pointed out by means of the clock code, he should, in order to save time, without looking for the target, at once throw his gun over in the direction indicated. The layer should then have no difficulty in picking up the target in the field of the telescope.

\*12. In the event of a missfire or of a new firing pin being inserted in the striker, it may be necessary to gauge the protrusion of the striker. The procedure will be as follows :—

Swing the breech screw and carrier into the loading position and remove the striker. Take out the main spring from the striker and reassemble the latter. Replace the striker (without main spring) in position in the gun, press in the catch retaining breech screw and revolve the breech screw in the carrier until it is in the position it would be for firing if the breech were closed. Press the striker forward in the breech screw as far as it will go and apply the gauge to the front face of the breech screw.† In the event of the protrusion not being between the limits of .09 and .11 of an inch the firing pin must be exchanged ; if the protrusion is too great the act of closing the breech may fire the gun and an accident result.

† Extract from Regulations for Magazines and Care of Materiel.



## No. 2.

1. No. 2 sits on the seat facing the breech and astride the brake arm, and must be careful that his left leg and arm are clear of the recoil (especially at extreme left traverse) before he reports "Set."

2. He is responsible that the brake is always put on when in action. When putting on the brake, either for travelling or firing, great care should be taken that the brake is not put on too hard. When in action the brake should be put on with the quick release lever housed.

3. He opens and closes the breech as follows:—

*To open the breech.*—He takes hold of the lever with his left hand (pressing the spring with his fingers) and draws it smartly towards him. When the gun is fired his left arm should be extended ready to grasp the lever breech mechanism as the gun is running up. As soon as the breech is opened and the cartridge extracted he should ease up the extractor so that the next round can slide home into the chamber.

*To close the breech.*—He swings the breech screw smartly round into its position in the gun.

A dented cartridge case or burred driving band may on some occasions cause difficulty in closing the breech. When such difficulty occurs he should grasp the lever breech mechanism with both hands and exert the whole weight of his body on the breech screw to *press* the shell home, but the breech screw must on no account be used as a hammer to drive the cartridge home.

If the breech cannot be closed in this manner the most probable cause is a loose primer which should be examined, and if necessary screwed home. If the breech cannot be closed and the extractor will not withdraw the round, the primer must be unscrewed by the "key removing jammed cartridges." The plug end of the key is then screwed into the primer hole and the cartridge withdrawn. A dragrope may be hooked to the eye of the key if necessary.

4. Before the range indicator can be moved on coming into action the clamping lever must be turned to the front and the gun depressed by means of the handwheel on the left side. Should the clamping lever become jammed a spanner, No. 122, may be inserted in the handwheel on the left side and slightly revolved; the lever can then be released.

5. He must follow up on the range indicator the ranges ordered. He should set the range indicator to a range greater than the range ordered and then *depress* until it reads the correct range. He should bring his eye close to the range indicator in order to ensure accurate setting. Elevation is given by turning the handwheel to the rear. REAR—RAISE.

Should there be a tendency for the range indicator to revolve on

the gun being fired he must keep it steady by holding the handle with his right hand.

6. When there is a change of target No. 2 must always be ready to assist No. 1 by manning the right wheel if required.

7. If the aiming point is to the left he must assist No. 3 by laying on it with the finder of the No. 7 dial sight.

8. At "Cease Firing" the gun must be fully depressed by the handwheel on the right side, and fully elevated by that on the left side. The clamping gear must then be engaged by turning the clamping lever to the rear, and slightly depressing the gun by the handwheel on the left side.

9. When manning the wheel to move the gun forward he should grasp the spoke which is nearest to the horizontal with his left hand, and the fourth one from it to the front with his right hand. The spokes should be grasped as near the felloe as possible.

10. When replacing the dial sight in its holder he must take care that the catch-pin of the holder engages in the recess in the carrier, otherwise the sight may be jolted out of the holder and seriously damaged.

11. He should only move the safety catch to "safe" when it is desired to travel with guns loaded.

#### No. 3.

1. On coming into action he must be careful not to delay the placing of the wagon by standing outside the left gun wheel.

2. When fixing the telescope he must take care that the small stud in rear of the telescope fits into the slot on the rear bearing of the sight bar.

3. To facilitate rapidity in laying he should clamp the No. 7 dial sight so that the eye piece suits the height of his eye, at the same time keeping it as low as possible.

4. When in action the normal position of his hands will be as follows:—The left hand on the elevating handwheel, and the right hand on the traversing handwheel. As soon as the gun is laid he grasps the firing lever with his right hand. Directly the gun is fired his right hand resumes its former position.

He must remember that to give elevation or to traverse the gun to the right he must turn the elevating and traversing handwheels respectively to the rear. **RAISE—RIGHT—REAR.** One complete turn of the elevating and traversing handwheels gives about half a degree of elevation and deflection respectively.

5. When placing *right* deflection on the rocking bar or No. 7 dial sight he should always turn the *right* micrometer head with the *right* hand *away* from himself. When giving *left* deflection he should turn the *left* micrometer head with the *left* hand *towards* himself. **RIGHT—AWAY.**

6. When using the No. 7 dial sight whole degrees must be put on the main scale and minutes on the deflection or lower scale.

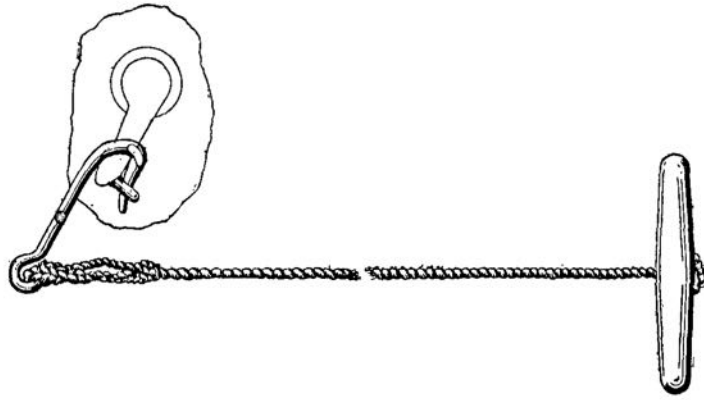
† The exact amount given by one complete turn is 40 minutes.

After making use of the thumb piece for setting the main scale the micrometer head must be turned through several degrees (to ensure that the worm and rack are properly engaged) before making the final adjustment.

7. To raise the angle of sight the rear micrometer head of the sight clinometer must be turned to the right and vice versa to lower the angle of sight. **RIGHT—RAISE. LEFT—LOWER.**

8. It must be remembered that after the spade has been embedded in the ground by the first round, the gun elevates for successive rounds about 10 minutes, and moves to the right or left according to the amount of traverse right or left on the traversing gear, and the slope or irregularities of the ground. The layer must try and rectify this movement as soon as possible after firing, and the gun should be relayed practically as soon as the run up is completed. By these means only can rapid and accurate fire be maintained.

9. He fires the gun by pulling the firing lever of the carriage smartly and at once releasing it. Should the firing lever on the carriage become damaged the gun may be fired by 1, who will hook a lanyard to the loop on the trigger lever, as in diagram :—



10. Whenever the gun has to be moved in action, he must take off the brake by means of the quick release lever and put it on again by the same means only, when the gun is in the correct position. On the order "Cease Firing" the lever must be secured by its quick release strap.

#### No. 4.

1. He should always have one round of ammunition ready for loading, and be prepared to set the fuze if necessary.

2. *To load.*—He places the head of the shell in the bore, being careful not to strike the breech, supporting the round on the back of the left forearm and pushing it home with the palm of the right hand, fingers uppermost, raising his right hand smartly so that his palm strikes against the upper part of the breech, thus keeping his fingers clear of the breech screw. The practice of pushing the round home by means of the fingers is dangerous, since if the breech should be quickly closed before his fingers are clear they are liable to be injured.

3. He is responsible for attending to the wagon brake. To put on the brake the handle must be turned to the right, and to take it off it must be turned to the left. RIGHT—TIGHT. LEFT—LOOSE.

4. When examining ammunition boxes he must see that they are properly filled, that the lids open easily and that the locks are in good order. These instructions apply to all ammunition numbers.

#### No. 5.

1. The rapid supply of ammunition to the gun is most important. This can only be maintained if there is a good mutual understanding between Nos. 5 and 6.

2. When in action six rounds per gun must be always available for immediate use with covers and clips removed and primers examined. If firing is likely to be continuous a larger supply should be available. To facilitate the supply of ammunition, extra rounds may be withdrawn and placed on the ground. If the ground is wet or boggy some article, such as an ammunition carrier, should be placed underneath the rounds in order to prevent dirt, &c., adhering. A cartridge covered with earth or mud is liable to jam in loading.

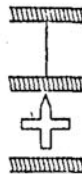
3. He should always use the fuze key for setting fuzes.

4. He should always follow up fuzes so that the least possible delay occurs between the calling out by No. 6 of the length of fuze required for his gun and the loading of the round.

5. He should always hand ammunition to 4 with the base of the cartridge leading.

6. He is responsible that every uncapped shell replaced by him in the limber or wagon body has the fuze set at "safety."

To set a fuze at "safety," the safety mark on the graduated scale and the vertical line on the setting ring must exactly coincide, thus :—



He examines primers in conjunction with No. 6 to see that they are screwed tightly home.

7. To "unhook" the wagon teams on coming into action 5 and 6 must go to the wheel traces, 5 on the off and 6 on the near side. They release the attachments and 6 steadies the pole while 5 guides the "bar supporting pole" off the pole if necessary.

8. To "hook in" the team, 6 holds up the pole near the foot-board on the near side, and 5 guides the ring of the bar supporting pole on to the pole. As soon as the ring is on the pole, they fasten the attachments of the wheel traces.

9. When unhooking, the inside traces should be released first, and, when hooking in, the outside traces should be first attached.

#### No. 6.

1. He must follow up all orders for corrector and range on his fuze indicator, so that the shortest possible time may elapse between the order to load and the calling out of the length of fuze.

2. The length of fuze must be called out loud enough for the section commander to hear, so that the settings may be checked.

3. The reader of the fuze indicator must invariably be used, and not the thumb nail.

4. When the reader comes between two readings on the indicator, the shorter reading should be called out.

5. When he is not following up on the fuze indicator, or setting it, he should be preparing ammunition, or assisting No. 5 in setting fuzes.

6. He is responsible that every uncapped shell replaced by him in the ammunition boxes at "cease firing" has the fuze set at "safety," as shown above.

#### Casualties to Equipment.

\*1. *Jammed breech mechanism.*—(See also Handbook, page 7.) If, after firing, the breech mechanism cannot be opened, No. 2 must first examine the trigger, and see that it has resumed its normal position, if not, he must press it into its position. If the breech is still jammed, he must then examine the guide for mainspring to see whether it is flush with the rear face of the carrier. If not flush, the firing mechanism must be removed before the breech can be opened. If flush, a dragrope may be attached to the lever breech mechanism to pull it open, care being taken that the catch retaining lever breech mechanism is pressed in before pulling on the rope.

Another means of opening the breech when jammed is as follows:—

No. 2 unstraps the pick, places one point between the handle of lever breech mechanism and carrier, helve pointing to the left rear, left hand at end of helve, right hand holding the other point of the pick, both hands back down; pick must be kept horizontal. No. 3 presses in "catch retaining lever breech mechanism" taking care to keep his fingers well clear of the point of the pick. No. 2 gives a sharp pull on the pick which will open the breech. No. 4 must lean well back to avoid the pick.

**\*2. Gun not running up.**—The principle causes of failure of the gun to run up are :—

- i. Too much oil in the buffer.
- ii. Want of lubrication of guides.
- iii. Broken spring case.
- iv. Weak or broken springs.

Should the gun fail to run up completely after firing, Nos. 2 and 3 should, during the run up, assist to push it home in the cradle.

**\*3. To lay the gun when the sight clinometer cannot be used.**—Set the field clinometer at the angle of sight ordered, place it on the clinometer bracket of the rocking bar and level the bubble by the handwheel on the *left* side.

**\*4. To lay the gun if the range indicator cannot be used.**—Set the field clinometer to the quadrant angle, place it on the clinometer plane of the gun, and level the bubble by the handwheel on the *right* side.

**\*5. To lay the gun when neither the rocking bar nor the dial sight can be used.**—Set the field clinometer to the quadrant angle,† place it on the clinometer plane of the gun, and level the bubble by either handwheel as may be most convenient. The direction will be obtained by making use of the sighting arrangement on the spring case and using the traversing gear as a deflection scale.

**\*6. Dial sight.**—If the dial sight cannot be used and no other is available the line of fire can be obtained as follows :—

For angles up to  $45^\circ$  from the aiming point.—Set the field clinometer to the angle ordered and place it horizontally against the outer side of the top fellow of the left gun wheel.

For right deflection the pivot pin must be to the rear.

For left deflection the pivot pin must be to the front.

Look along the edge of the slider and direct the gun so that the edge of the slider and aiming point are in line. Aiming posts should now be planted in line with the rocking bar sight set at zero, or an auxiliary aiming point picked up. Deflection for level of wheels must be placed on the rocking bar sight if necessary.

If the angle is from  $45^\circ$  to  $135^\circ$  the clinometer should be placed on the face of the breech set as follows :—

For angles between  $45^\circ$  and  $90^\circ$ .—Subtract the angle from  $90^\circ$  and set the clinometer to the result obtained, the pivot pointing to the side of the aiming point.

For angles between  $90^\circ$  and  $135^\circ$ .—Subtract  $90^\circ$  from the angle ordered and set the clinometer to the result obtained, the pivot pointing away from the aiming point.

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† In the case of those guns which have "droop" the necessary allowance must be included.

## GUN DRILL.

The general principles of battery tactics which vary but little with the different equipments are laid down in Field Artillery Training.

The following paragraphs give the duties of the detachments on the section commander's orders.

Single detachments should be accustomed to drill as if forming part of a section, and the instructor should therefore always use the orders given for the section commander.

### The Detachment.

The detachment consists of 9 men, together with two horse-holders Nos. 10 and 11.

In each section an extra horse-holder, numbered 12, is required for the section commander.

The senior non-commissioned officer is 1, and is in charge of the gun. He rides on the left of the lead driver of the gun except at "Detachment Front" when he is on the right of the detachment.

The next senior is 7, who is in charge of the wagon.

The active numbers are Nos. 1 to 6 and are mounted men. The reserve numbers are Nos. 8 and 9. They are dismounted men and are carried on the limber of the first line wagons.

### Positions when Dismounted.

On dismounted parades the detachment falls in two deep, one pace between ranks, 1 on the right of the front rank. When at "Detachment Right Rear" they are formed up one horse's length on the right of, and in line with the gun muzzle.

### To Tell Off.

*At the order from the section commander ".....Section—Tell Off"—*No. 1 numbers himself 1, the left hand man of the rear rank 2; his front rank man 3; the second man from the left of the rear rank 4; his front rank man 5; and so on.

### Positions when Mounted.

For drill and manœuvre "Detachment Right Rear" will be the normal position, and the positions of the men of the detachment are as when dismounted with the following exceptions:—

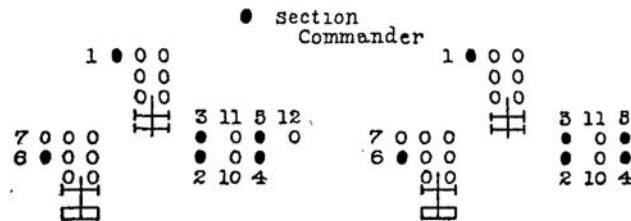
1 will be on the left of the lead driver of the gun.

6 and 7 on the left of the centre and lead drivers respectively of the firing battery wagon.

8 and 9 on the limber of the first line wagons, 8 on the near side, 9 on the off.

The horse-holders 10 and 11 between 2 and 4, and 3 and 5 respectively.

The following diagram shows a section formed for mounted parade :—



In cases of reduced detachments Nos. 6, 5 and 10 are omitted in succession.

### To Move the Gun with Dragropes, when Limbered Up.

At the order from the section commander. ".....Section—With Dragropes Prepare to Advance"—2 and 3 hook the dragropes to the gun-wheel washers; the two highest numbers go to the pole and the remainder man the ropes. Even numbers on the near side, odd numbers on the off.

At the order "Walk March" the carriages are moved to the front.

At the order "Halt" the carriages are halted and the detachments remain at their posts.

At the order "Detachments Rear" 2 and 3 replace the dragropes on the shield, and the detachments double to their places by the shortest way and halt.

### To Move the Gun without Dragropes, when Limbered Up.

At the order from the section commander. ".....Section—Without Dragropes Prepare to Advance"—2 and 3 push in rear of the shield; 4 and 5 man the gun wheels; the two highest numbers go to the pole and the remainder assist. Even numbers on the near side, odd numbers on the off.

At the order "Walk March" the carriages are moved to the front.

At the order "Halt" the carriages are halted and the detachments remain at their posts.

At the order "Detachments Rear" the detachments double to their places by the shortest way and halt.



### Preparation for Action.

*At the order from the section commander. ".....Section—Prepare for Action"—1 and the detachment, if mounted, dismount, and—*

1 sees that the bore is clear, superintends the other men, and satisfies himself that the gun and carriage are in all respects ready for action.

2 removes breech and muzzle covers; straps them on the front of the shield, examines the breech mechanism, extractor, ranging gear, clamping gear, shield and brake.

3 examines sights, brake, elevating, traversing, and firing gears.

4 examines the gun limber box. He provides himself with a fuze key from the carriage placing the lanyard round his neck and the key in his pocket.

5 examines the wagon limber box.

6 examines the wagon box.

5 and 6 provide themselves with fuze keys from the wagon.

8 examines the limber box of the first line wagon.

9 examines the wagon box.

The men who examine the ammunition boxes, uncover fuzes as ordered, and see that they are set at "safety," and examine the fuze indicators.

As the fuzes are liable to deteriorate rapidly when unprotected from damp, it is important that only such as are required for immediate use should be uncovered.

Breech and muzzle covers may be replaced if necessary.

Each man resumes his place as soon as he has completed his duties.

### Action Front.

*At the order or signal from the battery leader or section commander "Halt, Action Front"—1 orders "No. ....Halt, Action Front."*

*At the order from 1—*

The detachment dismounts, 3 unkeys and with 2 lifts the trail; when the trail is clear of the hook, 3 orders "*Limber Drive On.*"

On dismounted parades 6, 7, 8, and 9 will attend to the limber, 6 and 7 pushing in rear, 8 and 9 at the pole.

The limber advances one yard, wheels to the right about, at a trot, and proceeds direct to the wagon line.

2 and 3 carry the trail round half a circle to the right (3 shifting round the trail eye to avoid walking backwards), and lower it to the ground.

1 mans the near gun wheel, 4 assists if necessary.

As soon as the trail is lowered to the ground the wagon will drive up as laid down in F.A.T., Section 196, paragraph 1. 6 immediately unlimbers the wagon, 4 puts on the wagon brake if necessary, opens the wagon box and prepares to issue ammunition.

The position of the detachment is as follows:—

1 kneels on the left side of the trail.

2 sits astride on the seat on the right side.

3 sits on the seat on the left side.

4 kneels behind 3, or behind 2, if the wagon is on the right of the gun or at limber supply.

5 kneels in rear of the wagon on the side nearest the gun.

6 kneels in rear of the wagon on the side farthest from the gun.

8 and 9 remain with the first line wagons; they assist in the supply of ammunition and replace casualties in the firing battery as ordered.

At standing gun drill when no first line wagons are present, they take post six yards in rear of their gun.

As soon as the detachment is in position orders will be given regarding the reference point and target, or aiming point, sight to be used or angle of sight required, deflection, and also the range.

1 throws back the traversing lever, lays approximately for direction, and points out the target or aiming point to 3.

2 lowers the shield, unclamps the clamping gear, hands the dial sight to 3, puts on the brake, opens the breech, and adjusts the range indicator as ordered.

3 fixes the sight clinometer, dial sight, and, except when under cover, the telescope and lays.

4 supplies himself with a round of ammunition from the wagon.

5 prepares ammunition.

5 and 6 examine the primers to see that they are screwed tight home and screw up any which require it.

6 fixes and adjusts the fuze indicator.

Action Right—The trail is carried round a quarter of a circle to the left, 2 shifting round the trail eye.

Action Left—The trail is carried round a quarter of a circle to the right, 3 shifting round the trail eye.

In both cases the limbers advance one yard and wheel in the direction of the wagon line.

Action Rear—The trail is not carried round.

In each case the wagons are placed as for "Action Front."

When coming into "Action Front" on a side slope the trail should be carried round down hill.

#### **To Form Detachment Rear in Action.**

*At the order from the section commander ".....Section—Detachment Rear"—1 doubles to his place (three yards in rear of and covering the right wheel), and gives the order "No. .... Double, March."*

*At the order from 1—The remainder double to their places by the shortest way and halt.*

#### **To Take Post from Detachment Rear in Action.**

*At the order from the section commander. ".....Section—Take Post"—1 orders "No. .... Double, March."*

*At the order from 1—The detachment double to their places by the shortest way and halt.*

### General Duties in Action.

1 is responsible for the entire service of the gun. He commands, attends to the traversing lever, but will not touch it once the gun is laid. He orders deflection for difference in level of wheels. He assists in passing orders down the battery when necessary. He will occasionally examine the settings on the sight clinometer, range, and fuze indicators.

2 attends to the breech mechanism, range indicator, clamping gear, and brake; lowers and raises the shield, and attends to the fuze indicator on the shield when required.

When an order is given to "add," or "drop," the range for his gun he will make the necessary alteration on his range indicator and call out the new range loud enough for 6 to hear.

3 lays, fires, attends to the releasing lever of the brake, and assists 2 to raise the shield. When laying direct he should level the sight clinometer as soon as possible.

4 loads, assists in setting fuzes when required, and attends to aiming posts if in use.

5 sets fuzes and supplies ammunition.

6 attends to the fuze indicator, and assists in supplying ammunition.

### To Load.

At drill, only drill cartridges with wooden shell will be placed in the bore.

*At the order from 1 "No. .... Percussion Load"—*

4 sees that his round is set at "safety," loads, and receives another round from 5.

5 supplies 4 with a round set at "safety."

2 closes the breech, adjusts the range indicator to the elevation ordered and reports "set" when ready.

3 checks the lay, places his hand on the firing lever, and reports "ready."

*At the order from 1—No. .... Corrector (Range) Load"—*

6 sets the fuze indicator as ordered and calls out the length of fuze.

5 sets the fuze by hand or with the fuze-key and supplies the round to 4.

When there is no alteration of corrector or range for subsequent rounds, 1 will order "Time, Load."

The duties of 2, 3, and 4 are as for loading with percussion.

### To Fire.

A gun is not to be fired without the order from 1, who must never give this order until he sees that the gun is in all respects ready.

As soon as the gun is ready and its turn comes to fire, 1 orders "No. .... Fire."

On this order 3 fires the gun.

As soon as the gun is fired—

2 opens the breech.

3 re-lays.

Except when ranging with time shrapnel, guns should be reloaded at once.

None of the detachment should be directly in rear of the breech when it is opened.

#### **Missfire (Service Ammunition).**

If there is a missfire, the firing lever is pulled again at once. If it again fails to fire, after an interval of one minute the gun is unloaded and a fresh round placed in the bore. The primer is examined to see if struck, if not struck the striker is examined and changed if necessary. The gun is reloaded and fired when ordered. If the cap has been struck the round will be taken to the rear and examined.

\*If the primer has failed to ignite, it will be set apart for special examination, a fresh primer being substituted in the cartridge.

If, however, the magazine of the primer has fired, and failed to ignite the cordite charge, provided there is an opportunity for firing the round immediately by the substitution of a fresh primer, this may be done; failing this the shell will be removed, the charge withdrawn and destroyed (by laying it out in a train and lighting one end). The cartridge case and primer will be returned in the usual manner.

#### **Missfire (Blank Ammunition).**

1. No officer, non-commissioned officer, or gunner, is to command or form part of a section or gun detachment firing blank ammunition at salutes or at training who has not been trained and passed in gun drill.

2. When firing Q.F. blank cartridges, no gun is to be reloaded within 15 seconds after firing.

Even after this interval no gun is to be reloaded unless the No. 1 has examined the chamber and the bore and removed any "debris" remaining from the previous round.

3. In firing salutes not less than four guns are to be used. When firing signal rounds during training, however, any number of guns may be used provided that the conditions of paragraph 2 are fulfilled.

4. In the event of a missfire, at least one more attempt should be made to fire the gun, when it is again its turn, but in any case the breech must not be opened for at least one minute with "black powder" charges and ten minutes with "smokeless powder" charges after the last failure to fire the gun. None of the detachment should be directly in rear of the breech when it is opened.

In firing salutes, an officer or senior non-commissioned officer should be detailed for the special duty of timing the interval after a missfire, and informing the No. 1 of that gun when the breech may be opened.

5. As a further safeguard with guns using case ammunition, Nos. 1 are responsible that the charge is properly home in the case before the round is loaded. This can be done by pressing down the leather bound cup on the point of the traversing lever, a small mark being made under local arrangements on each traversing lever, to indicate when the charge is in its correct position.

#### **Battery, Section or Gun Fire.**

At the order from the section commander the gun is loaded by order of 1, fired in its turn at the interval ordered, and reloaded as soon as fired.

#### **To Stop Firing.**

At the order "Stop" the detachment will continue their duties but the gun must not be fired until the order "go on" is given.

#### **To Stand Fast.**

At the order from the section commander ".....Section—Stand Fast"—All stand fast whatever they are doing. At the order "go on" the work is continued.

#### **To Unload.**

At the order from 1, "No. .... Unload"—2 opens the breech slowly, and 4 withdraws the round and places it on the ground.

If an alteration in range or corrector has been ordered 4 will receive another round from 5, set at the proper fuze. The unloaded round can be reset or returned to the wagon.

#### **To Cease Firing.**

Before giving the order to cease firing, guns must be unloaded.

At the order from the section commander. ".....Section—Cease Firing"—

1 folds the traversing lever on the trail.

2 closes the breech, takes off the brake, depresses the gun to its full extent, raises and secures the shield, secures the clamping gear, receives dial sight from 3 and replaces it in the holder. When replacing the dial sight in the holder care should be taken that the catch is fully engaged.

3 sets traversing gear at zero, runs down the elevating gear to the travelling position, assists 2 to raise the shield, replaces sight clinometer and telescope if in use, hands dial sight to 2, and secures the traversing gear and quick release lever by their straps.

4 brings in the aiming posts, if in use.

5 and 6 reset fuzes at safety, replace clips and ammunition, close all lids; 6 replaces the fuze indicator, and takes off the brake.

#### **Casualties.**

Men sent up to replace casualties will report themselves to their section commanders who will order such changes of duties in their sections and detachments as they consider necessary.

If the full detachments cannot be maintained, the duties are divided as follows:—

With 5 men—4 performs the duties of 6, and 1 performs the duties of 1 and 4.

With 4 men—4 performs the duties of 5 and 6; 1 the duties of 1 and 4; 2 sets the fuze indicator on the shield.

With 3 men—1 performs the duties of 2 as well as his own; 2 performs the duties of 4, 5, and 6; 3 no change.

### To Limber Up.

*At the order from the section commander. ".....Section—Front Limber Up"—*

2 and 3 carry the trail round half a circle to the right (2 shifting round the trail eye to avoid walking backwards), and lower it to the ground.

4 and 5 man the wheels if necessary.

As soon as the trail is lowered the detachment gets under cover—1 in front of 2.

2 and 3 between breech and wheels.

4 and 5 between muzzle and wheels.

The whole with their backs to the shield.

The limber comes up on the right of the gun and one yard clear. When clear of the gun wheel it inclines to the left until the near wheel of the limber has just passed the trail eye. 1 then orders "Halt." The limber is halted, squared, and when square 1 orders "Limer Up." 2 and 3 lift the trail and place it on the hook. 3 keys up. 4 and 5 man the wheels if necessary. The detachment mounts without further orders.

If the wagon limber comes up it should precede the gun limber and will be immediately limbered up by 5 and 6.

Right, left, and rear limber up are the same except that at—

Right limber up—The trail is carried round a quarter of a circle to the right, 2 shifting round the trail eye.

Left limber up—The trail is carried round a quarter of a circle to the left, 3 shifting round the trail eye.

Rear limber up—The trail is not carried round.

Except in the case of "rear limber up" some man-handling of guns or wagons will be necessary in order to prevent the guides striking the wagon.

### To Change a Damaged Wheel.

Should a gun wheel be disabled in action, it should be immediately turned so as to bring the sound portion on to the ground, and notice sent to the Captain. The latter will immediately send up another wheel, which will be brought alongside the damaged one, and the wheels changed. To take the weight of the carriage while the wheel is being changed, a lifting jack may be used, or, the carriage may be raised by 4 men lifting at the damaged wheel (backs to the wheel), and, as soon as the carriage is raised high enough, the loop of the bar supporting pole can be

put under the shield near the hinge, with the end which is on the ground placed on a shovel to prevent it sinking in when the weight is taken by the bar. The bar acts as a vertical support while the wheel is being changed.

Should the wheel be damaged in such a manner that the axletree arm has fallen to the ground, the axletree can be raised above the horizontal by means of a limber as follows:—

Place a limber so that its hook comes over the point of the axletree with the pole at right angles to the gun. Secure one dragrope on the double, round the pole near the tug. Then hook a second dragrope round the pole as near the footboard as possible, passing the end of this rope over the limber box round the axletree, and back over the box. (The linch pin can be left in to prevent the rope slipping.) Raise the limber pole through an angle of about  $60^\circ$ , taking care that the wheels do not run forward, take in the slack on the dragrope, and take three turns round the pole with the running end. The axletree can then be raised by five men pulling down on the dragrope on the front end of the pole; as soon as it is high enough the bar supporting pole is placed in position supporting the carriage. The new wheel can then be put on without difficulty.

#### Change of Target.

\* When using No. 7 dial sight, before measuring a horizontal angle to obtain the line, the sight clinometer should be set at the angle of sight ordered and the bubble levelled; if no angle of sight has been ordered, the clinometer should be set at zero and levelled.

The dial sight is immediately layed on an aiming point, or auxiliary aiming point, and the angle noted. The switch angle is added to or subtracted from this angle, and the dial sight re-set to the angle thus obtained. The dial sight is relaid on the aiming point by moving the trail, and aiming posts, or post, planted (if required) in line with the telescope of the No. 7 dial sight set at zero. The traversing gear, for convenience, should be set at zero.

1 must assist the layer by measuring the switch angle with his hand, picking up some object in the new line and directing the gun on to it.

#### Parallel Lines to a Named Gun.

\* The named gun being in the required line, will not be moved, but the deflection scale of the dial sight will be brought to zero. The section commander will pick up a suitable aiming point, and then, using the dial sight of the named gun as a director, the angle will be measured between the aiming point and the axis of the gun, and given out to the other guns, together with any concentration or distribution due to the position of the aiming point. If the named gun had any correction for difference in level of wheels, this deflection should not be included in the angle given to the other guns.

### Laying by means of Aiming Posts.

\* On the order "Lines of Fire," 4 doubles out about 50 yards in front of the gun with his two aiming posts, and plants them as directed by 3, in line with the telescope of the No. 7 dial sight, set at zero. (The cowl may be set at any desired graduation to suit the position of the aiming post.) With guns fitted with No. 1 dial sight, the aiming posts should be planted in line with the rocking bar sight set at zero. When lines of fire are given to individual guns from a director in front of the battery, 4 will kneel down, and, as soon as he has received the angle for his gun, will stand up, salute, and pass on the order to 3.

If new lines of fire are ordered, 4 doubles out and on a signal from 3 picks up the aiming posts, the far one first, replanting them as above.

For guns not provided with No. 7 dial sight—When laying by means of aiming posts, or an auxiliary aiming point, if the deflection scale of the rocking bar sight becomes exhausted, the procedure will be as for "change of target." After completing this procedure, an auxiliary aiming point must be picked up over the deflection leaf of the rocking-bar sight.

### To Ascertain the Lowest Elevation at which the Trajectory will clear the Crest (or Intervening Obstacle).

\*Set the sight clinometer at the angle of sight ordered, or at zero if none has been ordered, and level the bubble with the left hand-wheel. Then, using the handwheel on the right side, elevate or depress the gun until the bottom of the bore just clears the crest or obstacle.

To the reading on the range indicator add a liberal estimate in degrees due to the distance from the gun to the crest or obstacle. The range indicator will now show the lowest elevation which will clear the crest.

This should always be done by 1 when coming into action under cover, and the range reported to the section commander.

If the above procedure has been carried out with an angle of sight of zero and the subsequent angle of sight is one of elevation, the trajectory will clear the crest at an elevation less by the amount of such angle of sight, and if one of depression, an elevation greater by that amount will be required.

Similarly, a corresponding alteration will be necessary on any subsequent order to raise or lower the angle of sight.

### TO TEST THE SIGHTS IN THE FIELD.†

\*Before commencing the tests a well-defined object must be

† These tests are only to be used when owing to emergency it is not possible to carry out the tests laid down in the Handbook.



selected to lay on at about 1,000 yards away, and the gun placed on a level platform.

#### **To Test the Sights for Line.**

Remove the striker and lay the bore for line on the object selected by means of the hole in the firing hole bush, and a thread stretched across the verticle lines on the muzzle. If the telescope pointer is on the target and the deflection scale is at zero, the telescope is in adjustment. If not, turn the adjusting bush on the pivot of the sight bar until the pointer is on the target. If the vertical line in the dial sight is not on the target when set at zero, turn the micrometer heads of the carrier until it is on the target and adjust the collars of the carrier to zero, and if necessary the pointer on the carrier.

#### **To Test the Sights for Elevation.**

Lay on the object with the telescope, and if the open sight does not agree, loosen the fixing screw of the foresight and screw the acorn up or down until it agrees with the telescope. If the dial sight does not agree revolve the micrometer head on the top of the sight until it agrees, then loosen the top clamp and revolve the micrometer scale to zero.

#### **To Adjust the Sight Clinometer.**

Lay on the object through the telescope. Turn the telescope upside down in its bearings, and if the tip of the pointer is on the same point, it is in collimation. If the telescope is in collimation, place the field clinometer set at zero on the top of the telescope holding it square, and level the bubble by the left handwheel. The telescope will then be horizontal and the sight clinometer must be adjusted to read zero.

If the telescope is not in collimation it should be changed or adjusted. If this is impracticable take the angle of sight to the target with some instrument known to be in adjustment. Lay on the target through the telescope and adjust the sight clinometer to read the correct angle of sight to the target.

NOTE.—The No. 3 director must always be tested and made to agree for angle of sight with the guns.

#### **To Adjust the Range Indicator.**

With the sight clinometer at zero, and the bubble in the centre of its run, place the field clinometer set at zero on the guides of the gun near the muzzle (seeing that they are clean). Then direct an assistant to depress the gun by the handwheel on the right side till the bubble of the field clinometer is in the centre of its run. If the range indicator is now not reading zero loosen the nut of the indicator and adjust it to read zero.